Attachment C

2020 Nine Percent (9%) Rate of Progress and Three Percent (3%) Contingency Plan

Lake and Porter Counties, Indiana

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2020 Nine Percent (9%) Rate of Progress Plan and Three Percent (3%) Contingency Plan for Indiana's Portion of the Chicago-Naperville, IL-IN-WI, 2008 8-Hour Ozone Nonattainment Area

Lake and Porter Counties, Indiana

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2020 NINE PERCENT (9%) RATE OF PROGRESS PLAN AND THREE PERCENT (3%) CONTINGENCY PLAN FOR INDIANA'S PORTION OF THE CHICAGO-NAPERVILLE, IL-IN-WI, 2008 8-HOUR OZONE NONATTAINMENT AREA

Lake and Porter Counties, Indiana

1.0 INTRODUCTION

Lake County and Porter County, Indiana, are part of the Chicago-Naperville, IL-IN-WI 2008 8-hour ozone nonattainment area (Chicago nonattainment area). On June 11, 2012, effective July 20, 2012, United States Environmental Protection Agency (U.S. EPA) designated this entire area as nonattainment in 40 CFR 81.315 and classified it as "marginal" under Subpart 2 of Part D, Title I of the Clean Air Act (CAA) (77 FR 34221). This classification provided three years for the area to attain the standard establishing an attainment date of July 20, 2015.

On May 4, 2016, effective June 3, 2016, due to failing to meet the attainment date, the Chicago nonattainment area was re-classified from "marginal" to "moderate" (81 FR 26697). This final rule established a new attainment date of July 20, 2018. Section 182(b)(1) of the CAA, and the final implementation rule titled *Implementation of the 2008 National Ambient Air Quality Standard for Ozone State Implementation Plan Requirements* (80 FR 12264, March 6, 2015), require areas classified moderate or above to develop a plan to demonstrate emission reductions of volatile organic compounds (VOCs) in the amount of fifteen percent from the baseline year of 2011, as well as a plan for an additional three percent as a contingency in the event that the area fails to meet the standard by the revised attainment date. This requirement has been fulfilled with Indiana's 2017 Fifteen Percent (15%) Rate of Progress (ROP) and Three Percent (3%) Contingency Plans for the moderate area classification approved by U.S. EPA on February 13, 2019, effective March 15, 2019, (84 FR 3711).[1]

On August 23, 2019, effective September 23, 2019 (84 FR 44238), due to failing to meet the attainment date, the Chicago nonattainment area was re-classified from "moderate" to "serious". This final rule aligned a new attainment date of July 20, 2021.

As required by Section 182(c)(2)(B), Indiana has developed a 2020 Nine Percent (9%) ROP and Three (3%) Contingency Plan that demonstrates Lake and Porter counties will achieve an average emission reduction of three percent per year after the first six years of the attainment planning period through the attainment date (2018 – 2020), plus an additional 3% contingency reduction through one year beyond the attainment year, i.e. 2021. In total, this requires a demonstration that Lake and Porter counties will achieve a reduction of VOC emissions of at least 12% from 2018 to 2021.

[1] https://www.govinfo.gov/content/pkg/FR-2019-02-13/pdf/2019-02212.pdf

These plans, which Indiana has prepared only for Indiana's portion of the Chicago nonattainment area, are referred to as the 2020 Nine Percent (9%) Rate of Progress and Three Percent (3%) Contingency Plans. In combination with existing ROP plans, these plans demonstrate an overall 27 percent emissions reduction from 2011 to 2021.

2.0 VOC AND NITROGEN OXIDE (NO_x) EMISSIONS TRENDS

As shown in the following tables, VOC and NO_x emissions are estimated to decline in Lake and Porter counties from 2011 to 2020.

In consultation with U.S. EPA, Indiana has developed an emissions inventory that represents a comprehensive, accurate, and current inventory of emissions from all sources of NO_x and VOCs in Lake and Porter counties. Point source (EGU and non-EGU), non-point, and non-road emissions were compiled from the data available on U.S. EPA's Emissions Modeling Clearinghouse website for the Chicago nonattainment area.[2] Indiana used the 2011v6.3 emissions modeling platform from the National Emissions Inventory Collaborative that includes a full suite of base year (2011) and projection year (2023) inventories, ancillary emission data, and scripts and software for preparing the emissions for air quality modeling. These remaining sectors (EGU, non-EGU, and non-point) were interpolated between 2011 and 2023.

On-road values for Lake and Porter counties in 2020 were produced by U.S. EPA's 2014a version of the MOVES software program by the Northwestern Indiana Planning Commission (NIRPC) (Appendix A3). Emission rates for 2017 were interpolated from the 2015 and 2020 runs using specs specific to 2017.

VOCs for all Source Sectors from 2011-2020 in Tons/Summer-day (tpsd)

Sector	2011	2017	2020	Difference (2011-2020)	Difference (2017-2020)
EGU	0.54	0.36	0.26	-0.28	-0.10
Non-Point	18.26	18.75	19.00	0.74	0.25
Non-Road	21.43	16.40	13.87	-7.56	-2.53
On-Road	9.58	8.03	6.18	-3.40	-1.85
Point	17.22	18.22	18.72	1.50	0.50
Total	**67.03**	**61.75**	**58.04**	**-9.00**	**-3.71**
Percent Reduction				**-13.43**	**-6.01**

[2] https://www.epa.gov/air-emissions-modeling/2011-version-63-platform

NO_x for all Source Sectors from 2011-2020 in Tons/Summer-day (tpsd)

Sector	2011	2017	2020	Difference (2011-2020)	Difference (2017-2020)
EGU	24.04	12.36	6.53	-17.51	-5.83
Non-Point	9.39	9.12	8.99	-0.40	-0.13
Non-Road	15.84	13.76	12.73	-3.11	-1.03
On-Road	24.70	18.77	13.01	-11.69	-5.43
Point	70.77	74.83	76.86	6.09	2.03
Total	**144.75**	**128.86**	**118.12**	**-26.62**	**-10.74**
Percent Reduction				**-18.39**	**-6.01**

3.0 2020 NINE PERCENT (9%) ROP and THREE (3%) CONTINGENCY PLAN

In order to demonstrate a 9% emissions reduction and 3% contingency, only detailed emissions reductions from existing control regulations have been used. Both VOC and NO_x reductions are needed to meet the RFP reduction targets. NO_x substitution is used on a percentage basis to cover any percentage shortfall in VOC emission reductions.

U.S. EPA guidance is to factor the 3% contingency through one year beyond the attainment year, i.e. 2021. However, demonstrating the 3% contingency through the year 2020 is a more conservative analysis. Thus, this analysis demonstrates a 12% rate of progress reduction by the end of 2020.

Demonstration ROP and Contingency Measure Reduction Requirements (tpsd)

Description	Formula	VOCs	NO_x
A. 2011 RFP Base Year Inventory		67.03	144.75
B. RFP Reductions Totaling 15%		6.5%	8.5%
C. RFP Reductions required between 2011 & 2017	A*B	4.36	12.30
D. RFP Target Level for 2017	A-C	62.68	132.45

E. 2017 Projected Emissions		61.75	128.86
F. Compare RFP with 2017 Projected Emissions to Determine if RFP and Contingency Measure Requirements are Met	E<D?	Yes	Yes
G. Total Surplus Reductions (for 2017)	D-E	0.93	3.59
H. RFP Reductions Totaling 9%		3.0%	6.0%
I. RFP Reductions required between 2017 & 2020	A*H	2.01	8.69
J. RFP Target Level for 2020	D-I	60.67	123.76
K. Contingency Percentage Totaling 3%		1.0%	2.0%
L. Contingency Emission Reduction Requirements	A*K	0.67	2.90
M. RFP + Contingency Target Level	D-I-L	60.00	120.86
N. 2020 Projected Emissions (2020 RFP & Contingency Inventory)		58.04	118.12
O. Compare RFP & Contingency Target with 2020 Projected Emissions to Determine if RFP and Contingency Measure Requirements are Met	N<M?	Yes	Yes
P. Total Surplus Reductions (for 2020)	M-N	1.96	2.74

4.0 EMISSION CONTROL MEASURES

VOC and NO_x emission reductions reflect existing rules and new rules such as the following:

On-road

- All on-road control programs finalized as of the date of the model run, including most recently:
- Tier-3 Vehicle Emissions and Fuel Standards Program: March, 2014

- 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards: October, 2012
- Greenhouse Gas Emission Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles: September, 2011
- Regulation of Fuels and Fuel Additives: Modifications to Renewable Fuel Standard Program (RFS2): December, 2010
- Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards; Final Rule for Model-Year 2012-2016: May, 2010
- Final Mobile Source Air Toxics Rule (MSAT2): February, 2007

Non-road

- All non-road control programs finalized as of the date of the model run, including most recently:
- Emission Standards for New Non-road Spark-Ignition Engines, Equipment, and Vessels: October, 2008
- Growth and control to years 2017 and 2025 from Locomotives and Marine Compression-Ignition Engines Less than 30 Liters per Cylinder: March, 2008
- Clean Air Non-road Diesel Final Rule – Tier 4: May, 2004
- Growth and control to years 2017 and 2025 from Locomotives and Marine Compression-Ignition Engines Less than 30 Liters per Cylinder: March, 2008
- Category 3 marine diesel engines Clean Air Act and International Maritime Organization standards: April, 2010.

Non-EGU Point

- National Emission Standards for Hazardous Air Pollutants (NESHAP): Reciprocating Internal Combustion Engines (RICE) with reconsideration amendments
- New Source Performance Standards (NSPS): oil and gas
- NSPS: RICE
- NSPS: Gas turbines
- NSPS: Process heaters
- Industrial/Commercial/Institutional Boiler Maximum Achievable Control Technology (MACT) with Reconsideration Amendments

Nonpoint

- NESHAP: RICE with reconsideration amendments
- NSPS: oil and gas
- NSPS: RICE
- NSPS: Gas turbines
- NSPS: Process heaters
- Industrial/Commercial/Institutional Boiler MACT with Reconsideration Amendments

EGU

- Cross-State Air Pollution Rule (CSAPR)
- Cooling Water Intakes (316(b)) Rule
- Combustion Residuals from Electric Utilities (CCR).

5.0 CONCLUSION

As shown above, Indiana's 2020 Nine Percent (9%) ROP and Three (3%) Contingency Plan demonstrates Lake and Porter counties will achieve an average emission reduction of three percent per year after the first six years of the attainment planning period through the attainment date (2018 – 2020), plus an additional 3% contingency reduction through one year beyond the attainment year, i.e.2021. After being able to demonstrate that the area is meeting reduction requirements by achieving the required targets, additional reductions were not required. In total, this analysis demonstrates a 12% rate of progress reduction by the end of 2020.

These Plans in conjunction with the attainment demonstration satisfy Indiana's obligation under Sections 172 and 182 of the CAA to demonstrate how the area will attain the air quality standard for ozone by the attainment date and ensure that the area will continue to maintain compliance with the 2008 8-hour ozone standard with an adequate margin of safety over time.